What is claimed is:

1. In a method of transferring toner images to opposite surfaces of a single recording medium and fixing said toner images, an image transferring and fixing step comprising the steps of:

heating with heating means a contact position where a first belt and a second belt, endlessly moving in a same direction at last at a position where said first belt and second belt face each other, contact each other;

transferring a first toner image from an image carrier to said first belt and heating said first toner image at the contact position to thereby transfer said first toner image to said second belt;

transferring a second toner image from said image carrier to said first belt; and

heating, at the contact position, the first toner image carried on said second belt to thereby transfer said first toner image to a first surface of the recording medium and fix said first toner image and, at the same time, heating the second toner image carried on said first belt to thereby transfer said second toner image to a second surface of said recording medium and fix said second toner image;

wherein a heating temperature of said heating means is higher than a melting point or a softening point of an

image forming agent, which forms the first toner image and the second toner image, by 5°C to 50°C, and

a heating range over which said heating means heats the contact position, as measured in a direction of belt length, is so sized as to implement transfer and fixation of the first toner image and the second toner image to the recording medium at said heating temperature.

2. In an image forming method comprising the steps of forming a first toner image on an image carrier, forming a second toner image on said image carrier, and executing simultaneous image transfer and fixation that transfers said first toner image to a first surface of a recording medium and fixes said first toner image and, at the same time, transfers said second toner image to a second surface of said recording medium and fixes said second toner image, said simultaneous image transfer and fixation comprising the steps of:

heating with heating means a contact position where a first belt and a second belt, endlessly moving in a same direction at last at a position where said first belt and second belt face each other, contact each other;

transferring the first toner image from the image carrier to said first belt and heating said first toner image at the contact position to thereby transfer said first toner image to said second belt;

transferring the second toner image from the image carrier to said first belt; and

heating, at the contact position, the first toner image carried on said second belt to thereby transfer said first toner image to the first surface of the recording medium and fix said first toner image and, at the same time, heating the second toner image carried on said first belt to thereby transfer said second toner image to the second surface of said recording medium and fix said second toner image;

wherein a heating temperature of said heating means is higher than a melting point or a softening point of an image forming agent, which forms the first toner image and the second toner image, by 5°C to 50°C, and

a heating range over which said heating means heats the contact position, as measured in a direction of belt length, is so sized as to implement transfer and fixation of the first toner image and the second toner image to the recording medium at said heating temperature.

3. An image forming apparatus for forming toner images on both sides of a single recording medium, said image forming apparatus comprising:

an agent storing section storing an image forming agent;

toner image forming means for forming a toner image

on an image carrier by using the image forming agent;

a first belt and a second belt contacting each other while endlessly moving in a same direction at least at a position where said first belt and said second belt face each other; and

heating means for heating a contact position where said first belt and said second belt contact each other;

wherein after a first toner image formed on said image carrier has been transferred to said first belt and heated at the contact position to be thereby transferred to said second belt and a second toner image formed on said image carrier has been transferred to said first belt, said first toner image on said second belt is heated, at said contact position, to be thereby transferred to a first surface of the recording medium and fixed while, at the same time, said second toner image on said first belt is heated to be thereby transferred to a second surface of said recording medium and fixed,

a heating temperature of said heating means is higher than a melting point or a softening point of the image forming agent, which forms the first toner image and the second toner image, by 5°C to 50°C, and

a heating range over which said heating means heats the contact position, as measured in a direction of belt length, is so sized as to implement transfer and fixation

of the first toner image and the second toner image to the recording medium at said heating temperature.

4. The apparatus as claimed in claim 3, wherein said heating means comprises:

a first heating member configured to heat the contact position from an inside surface of said first belt; and

a second heating member configured to heat the contact position from an inside surface of said second belt.

5. The apparatus as claimed in claim 4, wherein the recording medium passes through the heating range in 0.05 second or above.

6. The apparatus as claimed in claim 5, wherein the recording medium passes through the heating range in 1.00 second or below.

7. The apparatus as claimed in claim 4, wherein the image forming agent, heated at the contact position to the melting point or the softening point or above, is cooled off below said melting point or said softening point at said contact position.

8. The apparatus as claimed in claim 7, wherein the contact position is cooled off in a cooling range downstream of the heating range in a direction of belt movement.

9. The apparatus as claimed in claim 8, wherein said

first heating member and said second heating member respectively comprise a support member over which said first belt is passed and a support member over which said second belt is passed, and

part of said first belt, extending from said first heating member to a support member downstream of said first heating member in the direction of belt movement, and part of said second belt, extending from said second heating member to a support member downstream of said second heating member in said direction of belt movement, contact each other.

10. The apparatus as claimed in claim 7, wherein the image forming agent, heated in the heating range, softens to a viscosity of 10^6 Pa or below.

11. The apparatus as claimed in claim 10, wherein the image forming agent, heated in the heating range, softens to a viscosity of 10^5 Pa or above.

12. The apparatus as claimed in claim 3, wherein said first belt and said second belt each are 1 μm to 400 μm thick.

13. The apparatus as claimed in claim 3, further comprising first belt cooling means for cooling part of said first belt moved away from the contact position, but not reached a position where said first belt faces said image carrier.

14. The apparatus as claimed in claim 13, wherein said first belt cooling means comprises a heat pipe.

15. The apparatus as claimed in claim 13, further comprising first cleaning means for cleaning part of said first belt moved away from the contact position, but not reached said first belt cooling means.

16. The apparatus as claimed in claim 3, further comprising a peeler configured to peel off the recording medium from said first belt or said second belt at a position downstream of the contact position in a direction of belt movement.

17. The apparatus as claimed in claim 16, wherein said peeler is spaced from said first belt or said second belt by a clearance of 0.01 mm to 5 mm.

18. The apparatus as claimed in claim 3, wherein said image carrier comprises a plurality of image carriers arranged such that toner images formed on said plurality of image carriers are sequentially transferred to said first belt one above the other.

19. An image forming apparatus for forming toner images on both sides of a single recording medium, said image forming apparatus comprising:

toner image forming means for forming a toner image on an image carrier by using an image forming agent;

a first belt and a second belt contacting each other

while endlessly moving in a same direction at least at a position where said first belt and said second belt face each other; and

heating means for heating a contact position where said first belt and said second belt contact each other;

wherein after a first toner image formed on said image carrier has been transferred to said first belt and heated at the contact position to be thereby transferred to said second belt and a second toner image formed on said image carrier has been transferred to said first belt, said first image on said second belt is heated, at said contact position, to be thereby transferred to a first surface of the recording medium and fixed while, at the same time, said second toner image on said first belt is heated to be thereby transferred to a second surface of said recording medium and fixed,

the image forming agent comprises a specified image forming agent,

a heating temperature of said heating means is higher than a melting point or a softening point of the image forming agent, which forms the first toner image and the second toner image, by 5°C to 50°C, and

a heating range over which said heating means heats the contact position, as measured in a direction of belt length, is so sized as to implement transfer and fixation

of the first toner image and the second toner image.

20. The apparatus as claimed in claim 19, wherein said heating means comprises:

a first heating member configured to heat the contact position from an inside surface of said first belt; and

a second heating member configured to heat the contact position from an inside surface of said second belt.

21. The apparatus as claimed in claim 20, wherein the recording medium passes through the heating range in 0.05 second or above.

22. The apparatus as claimed in claim 21, wherein the recording medium passes through the heating range in 1.00 second or below.

23. The apparatus as claimed in claim 20, wherein the image forming agent, heated at the contact position to the melting point or the softening point or above, is cooled off below said melting point or said softening point at said contact position.

24. The apparatus as claimed in claim 23, wherein the contact position is cooled off in a cooling range downstream of the heating range in a direction of belt movement.

25. The apparatus as claimed in claim 24, wherein said first heating member and said second heating member

respectively comprise a support member over which said first belt is passed and a support member over which said second belt is passed, and

part of said first belt, extending from said first heating member to a support member downstream of said first heating member in the direction of belt movement, and part of said second belt, extending from said second heating member to a support member downstream of said second heating member in said direction of belt movement, contact each other.

26. The apparatus as claimed in claim 23, wherein the image forming agent, heated in the heating range, softens to a viscosity of 10^6 Pa or below.

27. The apparatus as claimed in claim 26, wherein the image forming agent, heated in the heating range, softens to a viscosity of 10^5 Pa or above.

28. The apparatus as claimed in claim 19, wherein said first belt and said second belt each are 1 μm to 400 μm thick.

29. The apparatus as claimed in claim 19, further comprising first belt cooling means for cooling part of said first belt moved away from the contact position, but not reached a position where said first belt faces said image carrier.

30. The apparatus as claimed in claim 29, wherein

said first belt cooling means comprises a heat pipe.

31. The apparatus as claimed in claim 29, further comprising first cleaning means for cleaning part of said first belt moved away from the contact position, but not reached said first belt cooling means.

32. The apparatus as claimed in claim 19, further comprising a peeler configured to peel off the recording medium from said first belt or said second belt at a position downstream of the contact position in a direction of belt movement.

33. The apparatus as claimed in claim 32, wherein said peeler is spaced from said first belt or said second belt by a clearance of 0.01 mm to 5 mm.

34. The apparatus as claimed in claim 19, wherein said image carrier comprises a plurality of image carriers arranged such that toner images formed on said plurality of image carriers are sequentially transferred to said first belt one above the other.

35. An image forming system comprising:

an image forming apparatus for forming toner images on both sides of a single recording medium; and

a computer configured to send control signals to said image forming apparatus;

said image forming apparatus comprising:

an agent storing section storing an image forming

agent;

toner image forming means for forming a toner image on an image carrier by using the image forming agent;

a first belt and a second belt contacting each other while endlessly moving in a same direction at least at a position where said first belt and said second belt face each other; and

heating means for heating a contact position where said first belt and said second belt contact each other;

wherein after a first toner image formed on said image carrier has been transferred to said first belt and heated at the contact position to be thereby transferred to said second belt and a second toner image formed on said image carrier has been transferred to said first belt, said first image on said second belt is heated, at said contact position, to be thereby transferred to a first surface of the recording medium and fixed while, at the same time, said second toner image on said first belt is heated to be thereby transferred to a second surface of said recording medium and fixed,

a heating temperature of said heating means is higher than a melting point or a softening point of the image forming agent, which forms the first toner image and the second toner image, by 5°C to 50°C, and

a heating range over which said heating means heats

the contact position, as measured in a direction of belt length, is so sized as to implement transfer and fixation of the first toner image and the second toner image to the recording medium at said heating temperature.

36. An image forming system comprising:

an image forming apparatus for forming toner images on both sides of a single recording medium; and

a computer configured to send control signals to said image forming apparatus;

said image forming apparatus comprising:

toner image forming means for forming a toner image on an image carrier by using an image forming agent;

a first belt and a second belt contacting each other while endlessly moving in a same direction at least at a position where said first belt and said second belt face each other; and

heating means for heating a contact position where said first belt and said second belt contact each other;

wherein after a first toner image formed on said image carrier has been transferred to said first belt and heated at the contact position to be thereby transferred to said second belt and a second toner image formed on said image carrier has been transferred to said first belt, said first image on said second belt is heated, at said contact position, to be thereby transferred to a first surface of

the recording medium and fixed while, at the same time, said second toner image on said first belt is heated to be thereby transferred to a second surface of said recording medium and fixed,

the image forming agent comprises a specified image forming agent,

a heating temperature of said heating means is higher than a melting point or a softening point of the image forming agent, which forms the first toner image and the second toner image, by 5°C to 50°C, and

a heating range over which said heating means heats the contact position, as measured in a direction of belt length, is so sized as to implement transfer and fixation of the first toner image and the second toner image.

37. In a thermal image transferring device comprising a first image carrier and a second image carrier, endlessly moving while carrying a toner image each, for transferring a first toner image formed on said first image carrier to said second image carrier and heating a second toner image newly formed on said first image carrier and said first toner image transferred to said second image carrier to thereby transfer said first toner image and said second toner image to opposite surfaces of a single recording medium, a coefficient of thermal expansion of said first image carrier and a coefficient of thermal

expansion of said second image carrier are selected such that a difference between a path length of said first image carrier and a path length of said second image carrier varies within an allowable range within a possible temperature range of said first image carrier and said second image carrier.

38. The device as claimed in claim 37, wherein a contact position where said first image carrier and said second carrier contact each other is heated to thereby transfer the first toner image and the second toner image to the opposite surfaces of the recording medium.

39. The device as claimed in claim 38, wherein said first image carrier and said second image carrier are configured such that said first image carrier and said second image carrier have a same path length at a preselected temperature and have a same coefficient of thermal expansion within the possible temperature range, and

said first image carrier and said second image carrier are subject to a same heating condition.

40. The device as claimed in claim 39, wherein said first image carrier and said second image carrier are provided with single layer structures formed of a same material.

41. The device as claimed in claim 39, wherein said

first image carrier and said second image carrier have laminate structures including bases formed of a same material.

42. The device as claimed in claim 41, wherein said first image carrier and said second image carrier comprise hollow, endless movable members having a same thickness, which is between 30 μm and 500 μm.

43. The device as claimed in claim 42, wherein the bases each are two times or more as thick as a layer formed on the base.

44. The device as claimed in claim 41, wherein the bases each are formed of a material containing an imide group, and a surface layer formed on the base is formed of either one of silicone rubber and fluorocarbon resin.

45. The device as claimed in claim 39, further comprising cooling means for respectively cooling off, on paths respectively assigned to said first image carrier and said second image carrier, part of said first image carrier and part of said second image carrier heated at the contact position, wherein said cooling means are located on said paths such that a temperature of said first image carrier and a temperature of said second image carrier vary in a same manner as each other.

46. The device as claimed in claim 37, wherein said first image carrier and said second image carrier are

configured such that said first image carrier and said second image carrier have a same path length at a preselected temperature and have a same coefficient of thermal expansion within the possible temperature range, and

said first image carrier and said second image carrier are subject to a same heating condition.

47. The device as claimed in claim 46, wherein said first image carrier and said second image carrier are provided with single layer structures formed of a same material.

48. The device as claimed in claim 46, wherein said first image carrier and said second image carrier have laminate structures including bases formed of a same material.

49. The device as claimed in claim 48, wherein said first image carrier and said second image carrier comprise hollow, endless movable members having a same thickness, which is between 30 μm and 500 μm.

50. The device as claimed in claim 49, wherein the bases each are two times or more as thick as a layer formed on the base.

51. The device as claimed in claim 48, wherein the bases each are formed of a material containing an imide group, and a surface layer formed on the base is formed

of either one of silicone rubber and fluorocarbon resin.

52. The device as claimed in claim 46, further comprising cooling means for respectively cooling off, on paths respectively assigned to said first image carrier and said second image carrier, part of said first image carrier and part of said second image carrier heated at the contact position, wherein said cooling means are located on said paths such that a temperature of said first image carrier and a temperature of said second image carrier vary in a same manner as each other.

53. An image forming apparatus comprising:

a latent image carrier;

latent image forming means for forming a latent image on said latent image carrier;

image transferring means for transferring a toner image, formed by depositing a toner on the latent image, from said image carrier to a first image carrier endlessly moving; and

thermal image transferring means for heating, after transferring a first toner image carried on said first image carrier to a second image carrier endlessly moving, a second toner image newly formed on said first image carrier and said first toner image transferred to said second image carrier to thereby transferring said first toner image and said second toner image to opposite

surfaces of a single recording medium;

wherein said thermal image transferring means is configured such that a coefficient of thermal expansion of said first image carrier and a coefficient of thermal expansion of said second image carrier are selected such that a difference between a path length of said first image carrier and a path length of said second image carrier varies within an allowable range within a possible temperature range of said first image carrier and said second image carrier.

54. The apparatus as claimed in claim 53, wherein said image transferring means forms an electric field between said latent image carrier and said first image carrier for electrostatically transferring a toner image from said latent image carrier to said first image carrier, and

said first image carrier and said second image carrier each have a volumetric resistivity of 10^6 Ω·cm or above, but 10^{12} Ω·cm or below, and a surface resistivity of 10^8 Ω·cm^2 or above, but 10^{14} Ω·cm^2 or below.

55. The apparatus as claimed in claim 54, wherein a resistance control agent for controlling the volumetric resistivity or the surface resistivity comprises an electron conduction type of conduction agent.

56. An image forming apparatus comprising:

a latent image carrier;

latent image forming means for forming a latent image on said latent image carrier;

image transferring means for transferring a toner image, formed by depositing a toner on the latent image, from said image carrier to a first image carrier endlessly moving;

thermal image transferring means for heating, after transferring a first toner image carried on said first image carrier to a second image carrier endlessly moving, a second toner image newly formed on said first image carrier and said first toner image transferred to said second image carrier to thereby transferring said first toner image and said second toner image to opposite surfaces of a single recording medium;

mark sensing means for sensing a mark so formed on said second image carrier as to allow a leading edge position of the first toner image carried on said second image carrier to be determined; and

latent image forming timing control means for controlling a timing at which said latent image forming means forms a latent image representative of the second toner image on said latent image carrier such that a leading edge position of the first toner image and a leading edge position of the second toner image coincide with each other

on the opposite surfaces of the recording medium.

57. An image forming apparatus comprising:

a latent image carrier;

latent image forming means for forming a latent image on said latent image carrier;

image transferring means for transferring a toner image, formed by depositing a toner on the latent image, from said image carrier to a first image carrier endlessly moving;

thermal image transferring means for heating, after transferring a first toner image carried on said first image carrier to a second image carrier endlessly moving, a second toner image newly formed on said first image carrier and said first toner image transferred to said second image carrier to thereby transferring said first toner image and said second toner image to opposite surfaces of a single recording medium;

temperature sensing means for sensing a temperature of said second image carrier; and

latent image forming timing control means for calculating, based on an output of said temperature sensing means, a path length of said second image carrier by taking account of thermal expansion of said second image carrier, and

controlling a timing at which said latent image

forming means forms a latent image representative of the second toner image on said latent image carrier such that a leading edge position of the first toner image and a leading edge position of the second toner image coincide with each other on the opposite surfaces of the recording medium.